6.1 → Interest 6.2 → Saving money 6.3 → Borrowing Money

MATH 125 Finance Formula Sheet

6.1

Simple Interest

$$I = Prt \quad (1)$$

$$A = P(1 + rt) \quad (2)$$

$= P + I \hookrightarrow Prt$

Compound Interest

$$A = P\left(1 + \frac{r}{n}\right)^{nt} \quad (3)$$

6.2

$$P = \frac{A}{\left(1 + \frac{r}{n}\right)^{nt}} \quad (4)$$

6.1

$$A = Pe^{rt} \quad (5)$$

↳ continuously compounded interest

$$APY = \left(1 + \frac{r}{n}\right)^{n} - 1 \quad (6)$$

↳ Annual percentage yield

4.2 → % change $= \frac{\text{new} - \text{ref}}{\text{ref}} * 100\,\%$

Annuities

Future Value:

6.2

$$PMT = FV \cdot \frac{\left(\frac{r}{n}\right)}{\left[\left(1 + \frac{r}{n}\right)^{nt} - 1\right]} \quad (7)$$

$$FV = PMT \cdot \frac{\left[\left(1 + \frac{r}{n}\right)^{nt} - 1\right]}{\left(\frac{r}{n}\right)} \quad (8)$$

Present Value:

6.3

$$PMT = \frac{\left(P \cdot \frac{r}{n}\right)}{\left[1 - \left(1 + \frac{r}{n}\right)^{-nt}\right]} \quad (9)$$

→ loan amount

Credit Cards

$$R = \frac{-\log\left[1 - \frac{r}{n}\left(\frac{A}{PMT}\right)\right]}{\log\left(1 + \frac{r}{n}\right)} \quad (10)$$

→ Future value, loan amount

↳ # payments to pay back loan